it ſomewhat of a Sky-colour, he was, upon owning his ſurpriſe thereat, informed, that a dozen of them being put in, they would dye it to almoſt a full *Azure*. Which is touch't here, that, the Experiment being ſo eaſie to make, it may be tried, when the ſeaſon furniſhes thoſe Inſects; mean time, it ſeems not more incredible, that this Creature ſhould yield a Sky-colour, when put in water, than that *Cochineel*, which alſo is but an Inſect, ſhould afford a fine *red*, when ſteep'd in the ſame Liquor.

An Account Of Some Books.

I. Le Tome troiſieme et dernier des Lettres de *M. DES-CARTES.*

As the two firſt *Tomes* of M. *Des-Cartes* his Letters, contain Queſtions, for the moſt part of a *Moral* and *Phyſiological* Nature, propoſed to, and anſwer'd by him; ſo *this* conſiſts of the Conteſts, he had upon ſeveral Subjects with divers Men eminent in his time.

To paſs by that ſharp Conteſt, he was engaged in by ſome Profeſſors of Divinity at *Utrecht*, who endeavoured to diſcredit his Philoſophy, as leading to Libertiniſme and Atheiſme, notwithſtanding he made it ſo much his buſineſs, as to aſſert the Exiſtence of a Deity, and the Immortality of a Soul: We ſhall take notice of what is more to our purpoſe, *viâ.* the Differences, he had touching his *Dioptricks* and *Geometry*.

As for his *Dioptricks*, though a great part of the Learned World have much eſteem'd that Treatiſe, as leaving little to be ſaid after him upon that Subject; yet there have not been wanting Mathematicians, who have declared their diſagreement from his Principles in that Doctrine. The firſt of them was the Jeſuit *Eourdin*, Mathematick Profeſſor in the Colledg of *Clermont* at *Paris*; but this difference was ſoon at an end. A ſecond was Mr. *Hobbs*, upon whoſe account he wrote ſeveral Letters to *Merſennus*, containing many remarks conducing to the Knowledge of the Nature of *Reflection* and *Refraction*. But the Perſon, that did moſt learnedly and reſolutely attack the ſaid *Dioptricks*, was Monſieur *Fermat*, writing

writing firſt about it to *Merſennus*, who ſoon communicated his Objections to M. *Des-Cartes*, who failed not to return his Anſwer to them. But *Fermat* replied, and *Des-Cartes* likewiſe; and after many reciprocations, in which each party pretended to have the advantage, the matter reſted; until M. *Fermat* taking occaſion to write afreſh of it to M. *De la Chambre*, ſeveral years after *Des-Cartes*'s death, upon occaſion of a Book, written by M. *De la Chambre*, *Of Light*; diſcourſed with this new *Author* after the ſame rate, as he had done before with *Des-Cartes* himſelf, and ſeemed to invite ſome-body of his friends, to re-aſſume the former conteſt. Whereupon M. *Clerſelier* and M. *Rohault* took up the Gantlet, to aſſert the Doctrine of the deceaſed Philoſopher, exchanging ſeveral Letters with M. *Fermat*, all inſerted in this *Tome*, and ſerving fully to inſtruct the Reader of this Difference, and withal to elucidate many difficult points of the Subject of *Refractions*; eſpecially of this particular, *Whether the Motion of Light is more eaſily, and with more expedition, perform'd through* denſe *Mediums, than* rare.

Beſides this, though one would think, Diſputes had no place in *Geometry*, ſince all proofs there, are as many Demonſtrations; yet M. *Des-Cartes* hath had ſeveral ſcufles touching that Science. As M. *Fermat* had aſſaulted his *Dioptricks*, ſo He reciprocally examined his Treatiſe *De Maximis & Minimis*, pretending to have met with *Paralogiſmes* in it. But the Cauſe of M. *Fermat* was learnedly pleaded for, by ſome of his Friends, who took their turn to examine the Treatiſe of *Des-Cartes*'s Geometry; whereupon many *Letters* were exchanged, to be found in this Book, and deſerving to be conſidered; which doubtleſs the Curious would eaſily be induced to do, if Copies of this Book were to be obtain'd here in *England*, beſides that one, which the *Publiſher* received from his *Pariſian* Correſpondent, and which affords him the opportunity of giving this, though but Curſory, Account of it.

As to *Phyſicks*, there occur chiefly two Queſtions, learnedly treated of in this *Volume*, though not without ſome heat between M. *Des-Cartes* and M. *Roberval*. The *one* is, touching the Vibrations of Bodies ſuſpended in the Air, and their Center of Agitation: about which, there is alſo a Letter inſerted of

M. *Des-Cartes* to that late Noble and Learned Engliſh Knight, Sir *Charles Cavendiſh*. The *other* is, whether Motion can be made without ſuppoſing a *Vacuum*: where 'tis repreſented, That, if one comprehend well the Nature, aſcribed to the *Materia ſubtilis*, and how Motions, called *Circular*, are made, which need not be juſt *Ovals* or *true* Circles, but are only called Circular, in regard that their Motion ends, where it had begun, whatever irregularity there be in the Middle; and alſo, that all the Inequalities, that may be in the Magnitude or Figure of the parts, may be compenſated by other inequalities, met with in their Swiftneſs, and by the facility, with which the parts of the *Subtle Matter*, or of the firſt *Carteſian* Element, which are found every where, happen to be divided, or to accommodate their Figure to the Space, they are to fill up: If theſe things be well underſtood and conſidered, that then no difficulty can remain touching the Motion of the parts of Matter *in pleno*.

Beſides all theſe particulars, treated of in this *Tome*, there occur many pretty Queſtions concerning *Numbers*, the *Cycloid*, the manner of *Working Glaſſes for Teleſcopes*, the way of *Weighing Air*, and many other Curioſities, Mathematical and Phyſical.

I.I. ASTRONOMIA REFORMATA, *Auctore* JOHANNE BAPT. RICCIOLI, *Soc. Jeſu.*

For the Notice of this Book, and the Account of the Chief Heads contained therein, we are obliged to the *Journal des Scavans*; which informs us,

Firſt, That the Deſign of this Work is, that, becauſe ſeveral *Aſtronomers*, having had their ſeveral *Hypotheſes*, there is found ſo great a diverſity of opinions, that it is difficult thence to conclude any thing certain; this Author judged it alſo neceſſary, to compare together all the beſt Obſervations, and upon examination of what they have moſt certain in them, to reform upon that meaſure the Principles of *Aſtronomy*.

Secondly, That this *Volume* is divided into two Parts; whereof the *Firſt* is compoſed of *Ten* Books; in which the Author

conſi-

conſiders the principal Obſervations, hitherto made of the Motion of the Planets and the Fixed Stars, of their Magnitude, Figure, and other Accidents; drawing thence ſeveral Concluſions, in which he eſtabliſhes his *Hypotheſis*. The *Second* contains his *Aſtronomical Tables*, made according to the *Hypotheſes* of the Firſt Part, together with Inſtructions teaching the manner of uſing them.

Thirdly, That Aſtronomers will find in this Book many very remarkable things, concerning the *Apparent Diameter of the Sun* and the other Stars, the Motion of the *Libration of the Moon*, the *Eclipſes*, *Parallaxes*, and *Refractions*: And that this Author ſhews, that there is a great difference between *Optical* and *Aſtronomical* Refraction, which *Tycho* and many others have confounded; undertaking to prove, that, whereas theſe *Aſtronomers* have believed, that the remoter any Star is, the leſs is its Refraction, on the contrary the Refraction is the greater, the more a Star is diſtant. And among many other things, he ingeniouſly explicates the two contary Motions of the Sun, from Eaſt to Weſt, and *vice verſa*, by one onely Motion upon a *Spiral*, turning about a *Cone*.

Fourthly, That he repreſents, How uneaſie it is to eſtabliſh ſure Principles of this Science, by reaſon of the difficulties of making exact Obſervations. So, for example, in the Obſervation of the *Equinox*, every one is miſtaken by ſo many *Hours*, as he is of *Minutes*, in the Elevation of the *Pole*, or the Diameter of the Sun, or the Refraction, or in any other circumſtance. In the Obſervation of the *Solſtice*, the error of one only *Second* cauſeth a miſtake of an *Hour* and an *half*: mean time 'tis almoſt impoſſible to avoid the error of a *Second*; and even the ſharpeſt ſight will not be able to perceive it, except it be aſſiſted with an Inſtrument of a prodigious bigneſs. For to mark *Seconds*, though Lines were drawn as ſubtil as the ſingle threds of a Silk-worms Clew, (which are the ſmalleſt ſpaces to be diſcerned by the ſharpeſt Eye) by the Calculation made by this Author there would need an Inſtrument of 48. feet *Radius*, ſince Experience ſhews, that there needs no more at moſt, than 3600. threds of Silk to cover the ſpace of an *inch*. But, ſuppoſe one could have a *Quadrant* of this bigneſs, who can aſſure himſelf, that dividing it into

324000. parts (for ſo many *Seconds* there are in 90. *Degrees*) either in placing it, or in obſerving, he ſhall not miſtake the thickneſs of a ſingle thred of Silk? He adds, that Great Inſtruments have their defects, as the ſmall ones: For in thoſe, that are *Movable*, if the thred, on which the Lead hangs, is any thing big, it cannot exactly mark *Seconds*; if it be very fine, it breaks, becauſe of its great length, and the weight of the Lead: And in the *Fixed* ones, the greater the *Diameter* is, the leſs the Shadow or the Light is terminated; ſo that it is painful enough, exactly to diſcern the extremities thereof. Yet 'tis certain, that the greater the Inſtruments are, the ſurer *Aſtronomers* may be: Whence it is, that ſome *Aſtronomers* have made uſe of *Obelisks* of a vaſt bigneſs, to take the *Altitudes*; and Signior *Caſſini*, after the example of *Egnatio Dante*, cauſed a hole to be made on the higheſt part of a Wall of 95. feet in a Church at *Bononia*, through which the beams of the Sun falling on the Floor, mark as exactly as is poſſible, the height of that Luminary.

Fifthly, That the Author reaſons for the *Immobility of the Earth* after this manner. He ſuppoſes for certain, that the ſwiftneſs of the Motion of heavy bodies doth ſtill *increaſe* in their deſcent; to confirm which principle, he affirms to have experimented, That, if you let fall a Ball into one of the Scales of a Ballance, according to the proportion of the height, it falls from, it raiſeth different weights in the other Scale. For example, A Wooden Ball, of $1\frac{1}{2}$ ounce, falling from a height of 35 inches, raiſeth a weight of 5. ounces; from the height of 140 inches, a weight of 20 ounces; from that of 315 inches, one of 45 ounces; and from another of 560 inches, one of 80 ounces, *&c.* From this principle he concludes the Earth to be at Reſt; for, *ſaith he*, if it ſhould have a Diurnal Motion upon its Center, Heavy Bodies being carried along with it by its motion, would in deſcending deſcribe a *Curve Line*, and, as he ſhews by a *Calculus*, made by him, run equal ſpaces in equal times; whence it follows, that the Celerity of their Motion would not increaſe in deſcending, and that conſequently their ſtroke would not be ſtronger, after they had fallen thorow a longer ſpace.

III. ANA

III. ANATOME MEDULLAE SPINALIS, ET NERVORUM *inde provenientium*, GERARDI BLASII, *M. D.*

The Author ſhews in this little *Tract* a way of taking the entire *Medulla Spinalis*, or Marrow of the Back, out of its *Theca* or Bony Receptacle, *without Laceration*; which elſe happens frequently, both of the Nerves proceeding from it, and of the Coats inveſting it; not to name other parts of the ſame. This he affirms to have been put into practice by himſelf, by a fine Saw and Wedge; which are to be dexterouſly uſed: and he produceth accordingly in excellent Cuts, the Repreſentations of the Structure of the ſaid *Medulla* thus taken out, and the *Nerves*, thence proceeding; and that of ſeveral Animals, Dogs, Swine, Sheep.

He intermixes ſeveral Obſervations, touching the *Singleneſs* of this *Medulla*, againſt *Lindanus* and others; its *Original*, vid. Whether it be the Root of the Brain, or the Brain the Root of it: its difference of *Softneſs* and *Hardneſs* in ſeveral Animals; where he notes, that in *Swine* it is much ſofter than in Dogs, *&c.*

He exhibits alſo the Arteries, Nerves, and Veins, diſperſed through this *Medulla*, and inquires, Whether the *Nerves* proceed from the *Medulla* it ſelf, or its *Meninx*; and diſcourſes alſo of the *Principle* and *Diſtribution* of the Nerves; referring for ampler information in this and the other particulars, to that Excellent Book of the Learned Dr. *Willis*, *De Anatome Cerebri.*

Adverti ſement.